

Department of Mathematics and Statistics Colloquium

*Multivariate Space-Time Functional Model for
Hurricane Tracks and Intensity*

Job Candidate

Abstract: Hurricanes cause change to the natural environments, damage the human-suit environment, and even loss of life. Understanding the trends across space and time of a hurricane track and intensity should lead to improved forecasts and thus minimizing their damage. Viewing the storm's latitude, longitude, and wind speed as functions of time, we propose a novel spatiotemporal multivariate functional model to simultaneously allow for multivariate, longitudinally, and spatially observed data with noisy functional covariates. The proposed procedure is fully Bayesian and inference is performed using MCMC. This new approach is illustrated through simulation studies and hurricane track data from 2004 to 2013 in the Atlantic basin. Simulation results indicate that our proposed model outperforms its competitors and offers a significant reduction in the mean square error and averaged interval width while significantly increases the coverage probability. In addition, our method offers a 10% reduction in location and wind speed prediction error.

Thursday, January 18 at 3:30 in Roop 103

Refreshments at 3:15